

Yasuharu Suda et al.
Serial No.: 09/526,602
Filed: March 16, 2000
Page 2

REMARKS

Claims 21-27 are pending and presented for examination in connection with the subject application. Applicants have hereinabove amended independent claim 21.

Claim 21 has been amended to place the claim in better form for examination, without narrowing the scope of the claimed invention. Support for the amendments to claim 21 may be found, inter alia, in the specification at page 14, line 18 through page 15, line 4.

Applicants maintain that no new matter is presented by this Amendment. Accordingly, applicants respectfully request that this Amendment be entered.

Claim Objection

On page 2 of the October 9, 2001 Office Action, claim 21 was objected to because it purportedly contains informalities.

The Examiner stated that the Markush group in claim 21 mixes commas and semicolons for separating species. The Examiner further stated that the claim should be consistent in its use of these punctuation marks.

Applicants have hereinabove amended claim 21. Applicants maintain that the claim amendments place the claims in better form for examination without narrowing the scope of the claimed invention.

Accordingly, applicants respectfully request that the Examiner withdraw the objection to claim 21.

Yasuharu Suda et al.
Serial No.: 09/526,602
Filed: March 16, 2000
Page 3

Rejection under 35 U.S.C. § 112, first paragraph

On page 2 of the October 9, 2001 Office Action, claims 21-27 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which allegedly was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The Examiner stated that the claims have been amended to specify that heating occurs after the steps of dispersing and mixing while stirring. The Examiner further stated that this order of steps was not previously presented and does not appear to have basis in the specification as filed.

Applicants have hereinabove amended claim 21. Claim 21 as amended recites more clearly the feature of heating a thermoplastic while performing stirring after dispersing and mixing the thermoplastic resin in the solvent. As pointed out above, support for the amendments to claim 21 can be found, *inter alia*, in the specification at page 14, line 18 through page 15, line 4.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-27 under 35 U.S.C. §112, first paragraph.

Rejection under 35 U.S.C. § 112, second paragraph

On page 3 of the October 9, 2001 Office Action, claims 21-27 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as

Yasuharu Suda et al.
Serial No.: 09/526,602
Filed: March 16, 2000
Page 4

the invention.

The Examiner stated that the claims as amended are indefinite because it is unclear if the dispersing and mixing steps are actually required steps in the process. The Examiner further stated that the process only recites these steps in reference to the timing of the heating step, but they are not positively recited as occurring in the process.

Applicants have hereinabove amended claim 21. Applicants maintain that amended claim 21 clearly recites the subject matter applicants regard to be the invention.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-27 under 35 U.S.C. §112, second paragraph.

Rejection Under 35 U.S.C. § 103(a)

On page 3 of the October 9, 2001 Office Action, claims 21-24 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,358,822 to Hou (hereinafter "Hou '822").

The Examiner stated that Hou '822 discloses a process of making a liquid toner in the process of Example 2. The Examiner also stated that in the Hou '822 process a thermoplastic polymer and a pigment are placed in a solvent that is a good solvent for the polymer at high temperatures and a poor solvent at lower temperature. The Examiner further stated that the polymer and pigment are heated to a temperature where the polymer is dissolved and then cooled so the polymer precipitates with the pigment. The Examiner stated that the precipitated polymer particles are removed from the solvent and the redispersed in

Yasuharu Suda et al.
Serial No.: 09/526,602
Filed: March 16, 2000
Page 5

ISOPAR and mixed with cupric naphthenate along with a steric stabilizer (apparently a dispersant).

The Examiner acknowledged that Hou '822 does not disclose the respective solubility parameters of the resin and solvent. The Examiner stated that the resin and solvent in Hou '822 must inherently have a solubility parameter. The Examiner further stated that the size of the precipitated particles in Hou '822 would be a result of the solubility parameters of the solvent and resin and other process conditions, such as heating, mixing, and cooling characteristics.

The Examiner alleged that Hou '822, viewed from the perspective of the skilled artisan, would understand that the process variables, including SP, control the size, shape, and other characteristics of the particles.

The Examiner stated that the claims are not limited to particles having a size of 2 to 3 mm.

The Examiner further stated that although Hou '822 does not explicitly disclose that the thermoplastic resin as being insoluble at room temperature, the Hou '822 process does teach the mixture of polymer, pigment, and solvent are heated to 70°C to form a solution (i.e., to dissolve the polymer). The Examiner also stated that if the polymer dissolved at room temperature there would be no specific need to increase the temperature to a value substantially above room temperature. The Examiner further stated that this clearly suggests to the artisan that the polymer is not soluble or not substantially soluble at room temperature.

The Examiner also stated that Hou '822 exemplifies sonification to mix the components placed in the solvent and heating to 70°C to form a solution. The Examiner further stated that Hou '822 teaches that the components must be dispersed in the solvent, mixed, and heated to form the solution. The Examiner stated that mixing would be expected to expedite the dissolution of the polymer in the solvent. The Examiner further stated that whether the mixing starts before, continues through, or ends before heating is seen as obvious design choices for the artisan as Hou '822 teaches the requisite steps. The Examiner stated that as long as the required solution is formed, the order of conducting the steps are obvious design choices for the skilled artisan. The Examiner also stated that inorganic particles such as carbon black or other pigments are shown to be added to the solution before precipitation.

Applicants maintain that Hou '822 does not render obvious the invention claimed in independent claim 21 as amended. The claimed invention is patentable over Hou '822 for at least the following reasons.

Hou '822 appears to relate to a method of making a liquid toner for electrophotographic imaging.

The claimed invention provides (i) a method which may be used for manufacturing composite particles of resin and inorganic fine particles having an arbitrary particle diameter, by heating and dissolving a resin in an organic solvent whose SP value is adjusted in order to control the particle diameter of resin particles to be precipitated, and then cooling the resin, and (ii) a technique of combining resin particles and inorganic fine particles in the steps of adding the inorganic fine particles and

then cooling the particles to precipitate (form) resin particles. In other words, the step of forming resin particles and the step of combining resin fine particles and inorganic fine particles are executed not separately from each other but simultaneously. Hou '822 simply does not teach or suggest such features.

Further, although the concept of an SP value is known in the art, the SP value typically is used to express the degree of mixture of liquids or that of solubility of a resin (or polymer) when it is dissolved in an organic solvent.

If the SP values of two different substances are close to each other, the affinity thereof can be considered to be high, the two substances can be mixed uniformly. On the other hand, if the difference is large (for example, water and oil), they cannot be mixed uniformly. If a difference in SP value between resin and solvent is small, the resin is easy to dissolve in the solvent. However, if the difference is large, the resin is difficult to dissolve in the solvent.

For example, the SP value of paraffin is 7 and that of ethanol is 12.9, and a difference between them is too large. Therefore, they cannot be mixed uniformly. In contrast, since the SP value of paraffin is relatively close to that (8.9) of toluene, they can be mixed more uniformly. Thus, the SP values may be used to predict or infer whether two different liquids can be mixed uniformly and also to predict or reason the solubility of a resin. For example, a resin having an SP value of 9 is easily dissolved in toluene having an SP value of 8.9 but not in ethanol having an SP value of 12.9.

The Examiner pointed out that it is known that process variables

such as rotational speed and cooling speed of an impeller have an influence on the particle diameter of polymer fine particles to be precipitated. However, applicants maintain that the concept of determining a particle diameter by considering the SP values of the resin and the solvent, respectively, as taught by the claimed invention, is novel and unobvious, and is not disclosed or suggested by Hou '822.

Hou '822 simply does not disclose or suggest the advantages of the claimed invention through which a liquid toner composition capable of producing a high-quality image or a stable image can be achieved by imparting characteristics of electric viscous fluid to a liquid toner.

Regarding claims 22-24, applicants respectfully point out that claims 22-24 depend on and include all the limitations of claim 21. Thus, claims 22-24 are patentable at least for the reasons set forth above with respect to claim 21.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-24 under 35 U.S.C. § 103(a).

Rejection Under 35 U.S.C. § 103(a)

On page 5 of the October 9, 2001 Office Action, claims 25-27 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hou '822 as applied to claims 21-24, and further in view of U.S. Patent No. 3,808,026 to Sato et al. (hereinafter "Sato '026").

The Examiner stated that Sato '026 suggests addition of silica and titanium oxide to the liquid toner of Hou '822 as colorant.

The Examiner further stated that the reason for addition of these particles to Hou '822 does not need to be the same as the reasons used by applicant as long as there is rationale for the combination. The Examiner also stated that he has provided that rationale based on the disclosure of Hou '822. The Examiner further stated that a white pigment in the toner allows for development of the image background. The Examiner stated that the development of the background area on the photoreceptors permits neutralization of background charges and allows clear images to be formed. The Examiner also stated that there is ample motivation for the combination of the Sato '026 particles into the Hou '822 process and toner.

Applicants maintain that Hou '822 and Sato '026 do not render obvious the invention claimed in claims 25-27. The claimed invention is patentable over Hou '822 and Sato '026 for at least the following reasons.

Sato '026 appears to relate to a method of developing an electrostatic latent image formed on an electrophotographic surface.

Claims 22-24 depend on and include all the limitations of claim 21. As discussed above, the invention claimed in claim 21 provides (i) a method which may be used for manufacturing composite particles of resin and inorganic fine particles having an arbitrary particle diameter by heating and dissolving a resin in an organic solvent whose SP value is adjusted in order to control the particle diameter of resin particles to be precipitated, and then cooling the resin, and (ii) a technique of combining resin particles and inorganic fine particles in the steps of adding the inorganic fine particles and then cooling the

Yasuharu Suda et al.
Serial No.: 09/526,602
Filed: March 16, 2000
Page 10

particles to precipitate (form) resin particles. In other words, the step of forming resin particles and the step of combining resin fine particles and inorganic fine particles are executed not separately from each other but simultaneously. Sato '026, like Hou '822, does not teach or suggest such features.

Sato '026, like Hou '822, also fails to disclose or suggest the advantage of the claimed invention through which a liquid toner composition capable of producing a high-quality image or a stable image can be achieved by imparting characteristics of electric viscous fluid to a liquid toner.

Therefore, even a combination of the teachings of Hou '822 and Sato '026 fails to teach or render obvious all features of the claimed invention.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 25-27 under 35 U.S.C. § 103(a).

If a telephone interview would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the number provided below.

If a petition for an additional extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

No fee, other than the enclosed \$110.00 fee for a one-month extension of time, is deemed necessary in connection with the

Yasuharu Suda et al.
Serial No.: 09/526,602
Filed: March 16, 2000
Page 11

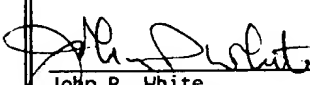
filing of this Amendment. However, if any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,



John P. White
Registration No. 28,678
Attorney for Applicants
Cooper & Dunham LLP
1185 Avenue of the Americas
New York, New York 10036
(212) 278-0400

I hereby certify that this correspondence is being deposited this date with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.



John P. White
Reg. No. 28,678

2/8/02
Date

Yasuharu Suda et al.
Seral No.: 09/526,602
Filed: March 16, 2000
Page A-1

21. (Twice Amended) A method of manufacturing a liquid toner composition for electrophotography, comprising the steps of:

heating a thermoplastic resin within a solvent capable of dissolving said thermoplastic resin when heated and substantially incapable of dissolving said resin at room temperature, an SP (solubility parameter) value of said solvent being adjusted to control the particle diameter of toner particles on a basis of a difference between an SP value of the resin and the SP value of the solvent, while performing stirring after dispersing and mixing said thermoplastic resin in said solvent [while performing stirring], to dissolve said resin in said solvent; and

cooling the mixture to permit precipitation of the toner particles, wherein inorganic fine particles are added to the mixture before initiation of the toner particle precipitation.